

Mercury

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CANADIAN DEVELOPMENTS

Since the closure of Cominco Ltd.'s Pinchi Lake mine in 1975, Canada no longer produces mercury metal. Mercury has been primarily an imported commodity in Canada. In 1999, Canada consumed a total of 2.8 t of metallic mercury, primarily for applications in electrical apparatus, industrial and control instruments, and for the electrolytic preparation of chlorine at the one remaining chlor-alkali plant for use in the pulp and paper industry. Consumption for applications such as gold recovery, industrial chemicals, and paints and pigments has been phased out. Canada exported 1.8 t of mercury in 1999 valued at \$8000, compared to 8.0 t in 1998 worth \$14 000. Imports totalled 9.4 t valued at \$85 000 in 1999, compared to 11.4 t worth \$109 000 in 1998.

WORLD DEVELOPMENTS

World production of mercury has been declining steadily over the past few years. Total world production was 2252 t in 1998, compared to 2888 t in 1997. Spain was the world's largest producer followed by Kyrgyzstan, China and Algeria. Together these four countries accounted for just over 94% of the world's total production of mercury in 1998. Mercury recovered from primary sources accounts for about 60% of world consumption, with the remainder being supplied from recycled sources.

In the United States, about 15 t of mercury are recovered as a by-product of gold mining in Nevada, California and Utah. Secondary production greatly outweighs production from primary sources. According to the U.S. Geological Survey, the United States produced some 400 t of secondary mercury in 1998. Sales of mercury by the Defense Logistics Agency

(DLA) from the National Defense Stockpile remained suspended in 1999 pending completion of an analysis of the potential environmental impact of the sales.

Elsewhere in the world, mines in Slovenia, Turkey and the Ukraine remained closed. By-product production from mining continues in Finland, Tajikistan, Mexico and Chile. The decommissioning of mercury chlor-alkali plants in Europe and elsewhere remains a significant source of secondary mercury. Plant closures in Finland, Norway the United Kingdom and South Africa have contributed some 360 t since 1997. Further plant closures and conversions are planned. There are some 100 mercury cell chlor-alkali plants still in operation worldwide.

CONSUMPTION AND USES

Until the 1960s, mercury was used primarily as a flowing mercury cathode for the electrolysis of an aqueous sodium chloride solution to yield chlorine and caustic soda. Process losses to the environment became a concern and many chlor-alkali plants were either closed or converted to diaphragm cell or ion exchange technologies. Worldwide demand for this application continues to be the single largest use for mercury but is declining as older facilities are being closed and replaced with mercury-free technology.

Batteries are another major market for mercury that is experiencing a decline as manufacturers switch to alternative metals. The third, but also shrinking, market for mercury is in electrical applications. Uses range from metallic mercury switches in thermostats to mercury-vapour discharge lamps. Other uses include dental amalgams, temperature- and pressure-measuring devices, detonators, pigments and pharmaceuticals. Increased concerns related to the risks of exposure to human health and the environment have led to increased restrictions on the uses of mercury; however, its unique properties will likely guarantee its use in some key sectors for the foreseeable future.

Mercury is a naturally occurring element that is unique amongst the metals in that it is liquid at ambient temperatures. At room temperature, mercury is a silvery white colour. It is solid white below

its melting point of -38.9°C and is a colourless gas above its boiling point of 356.9°C . Mercury exists in nature in some 25 different minerals but is most commonly recovered from the red sulphide mineral known as cinnabar (HgS).

Other common mercury ores include corderoite and livingstonite. Native mercury metal exists in nature but is rare. Mercury deposits are generally formed at relatively low temperatures in the world's major orogenic belts.

PRICES AND OUTLOOK

The commercial unit for handling mercury is the "flask," which weighs 34.47 kg (76 lb). Prices for mercury peaked in 1988 at US\$335.52/flask and have since declined. Mercury prices reached their lowest level in September 1991 at US\$85/flask. North American mercury prices started 1999 at US\$165-\$185/flask, but declined steadily in the first quarter of the year and remained in the \$140-\$160/flask range for a year-end average of about \$153/flask (for lots sold containing 50 flasks or more). In Europe,

prices continued to reflect the oversupplied market from Eastern European sources, trading in the \$US135-\$145/flask range throughout most of the year. North American prices are expected to remain in the \$140-\$160/flask range in 2000. In the longer term, prices are expected to remain relatively stable as demand in mercury's remaining markets stabilizes.

Note: Information in this review was current as of January 7, 2000.

NOTE TO READERS

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TARIFFS

Item No.	Description	Canada			United States
		MFN	GPT	USA	Canada
2617.90.00.90	Mercury ores and concentrates	Free	Free	Free	Free
2805.40	Mercury	Free	Free	Free	Free
2825.90.10.20	Mercury oxides	4%	Free	Free	Free

Sources: Customs Tariff, effective January 2000, Canada Customs and Revenue Agency; Harmonized Tariff Schedule of the United States, 2000.

TABLE 1. CANADA, MERCURY TRADE, 1997-99, AND CONSUMPTION, 1996-98

Item No.	1997		1998		1999P	
	(kilograms)	(\$000)	(kilograms)	(\$000)	(kilograms)	(\$000)
EXPORTS						
2805.40	Mercury					
	United States	4 264	7	8 037	14	1 778
	Total	4 264	7	8 037	14	1 778
IMPORTS						
2805.40	Mercury					
	United States	6 855	63	10 500	101	9 150
	Germany	218	3	280	2	258
	Other countries	51	...	609	6	26
	Total	7 124	66	11 389	109	9 434
2825.90.10.20	Mercury oxides					
	Germany	35	1	119	2	635
	United States	393	8	344	6	522
	United Kingdom	5	...	3	...	127
	Switzerland	12	...	-	-	-
	Total	445	9	466	8	1 284
		1996		1997		1998P
				(kilograms)		
CONSUMPTION¹ (metal)						
	Electrical apparatus, industrial and control instruments	x		x		x
	Electrolytic preparation of chlorine and caustic soda and other uses	x		x		x
Total		6 327		x		2 803

Sources: Natural Resources Canada; Statistics Canada.

- Nil; ... Amount too small to be expressed; P Preliminary; x Confidential.

¹ Available data as reported by consumers.

Note: Numbers may not add to totals due to rounding.

TABLE 2. AVERAGE MERCURY PRICES, 1997-99

	New York		
	1997	1998	1999
		(US\$/flask)	
January	233.98	187.00	175.00
February	232.76	187.00	152.63
March	210.00	187.00	150.00
April	228.64	187.00	150.00
May	220.00	187.00	150.00
June	199.05	181.55	150.00
July	200.00	175.00	150.00
August	198.10	175.00	150.00
September	190.83	175.00	150.00
October	198.83	175.00	150.00
November	191.47	175.00	150.00
December	187.00	175.00	150.00
Yearly average	207.56	180.55	152.30

Source: American Metal Market.

TABLE 3. WORLD PRODUCTION OF MERCURY, 1995-98

Country	1995	1996	1997	1998 ^p
	(tonnes)			
Algeria	295.0	368.0	447.0	224.0
Chile	9.0	5.0	4.0	5.0
China ^e	780.0	510.0	830.0	600.0
Finland	90.0	88.0	63.0	54.0
Kyrgyzstan	380.0	584.0	611.0	629.0
Mexico	15.0	15.0	15.0	15.0
Slovenia	4.0	—	—	—
Spain	1 497.0	1 053.0	863.0	675.0
Tajikistan ^e	50.0	45.0	40.0	35.0
Ukraine ^e	40.0	30.0	—	—
United States	15.0	15.0	15.0	15.0
Total world	3 175.0	2 713.0	2 888.0	2 252.0

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metal Statistics.

— Nil; ^e Estimated; ^p Preliminary.